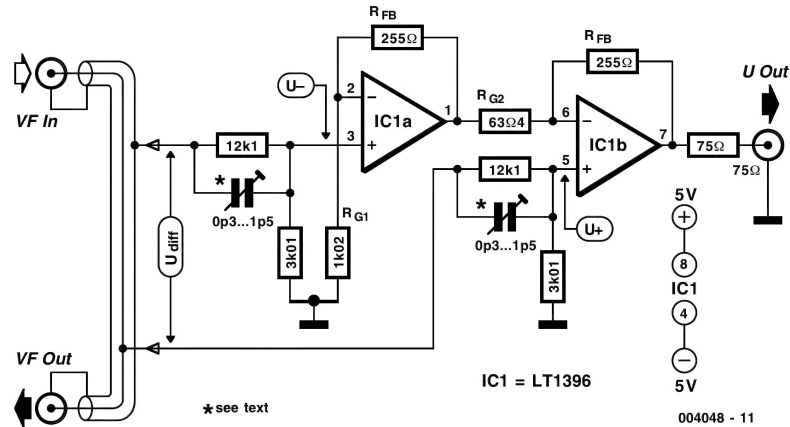


G. Kleine

If you want to connect a video signal to several destinations, you need a distribution amplifier to match the 75-ohm video cable. A distribution amplifier terminates the incoming cable in 75 ohms and provides several outputs, each with 75-ohm output impedance. Since this is usually achieved by putting a 75-ohm series resistor in the output lead of each video opamp (current-feedback amplifier), the opamps must be set up for a gain of 2 in order to achieve an insertion gain of 1 (0 dB). The disadvantage of this arrangement is that if the amplifier or its power supply fails, no signal is available at any of the outputs.

This can be remedied by using a high input impedance amplifier, which can be tapped into a video line without having to have its own 75-ohm termination resistor. In order to eliminate hum interference and voltage differences between the cable screen and the circuit earth, the circuit exploits the common-mode rejection of the opamp. This can be optimised with resistor R_{G1} . With the indicated LT1396 video opamp, more than 40 dB of common-mode rejection can be achieved. The signal bandwidth of the circuit can be optimised using the trimpots. It reaches to more than 10 MHz, which is quite acceptable for



$$V_{OUT} = 1/2 \cdot G \cdot (V_+ - K) = 1/10 \cdot G \cdot V_{DIFF}$$

$$R_{G1} = (G + 3)$$

$$R_{G2} = R_{FB} / (G + 3)$$

video signals.

Thanks to the high-impedance connection to the video line, the video signal is not affected when the power for the coupled amplifier is switched off. You can learn more about the LT1396 from its data sheet at <http://www.linear-tech.com>.